April 24, 2014

MEMORANDUM FOR: NCEP Model Implementation Scientific Review Team

FROM: Chris Caruso Magee, Team Lead, Production Control
Production Management Branch, NCEP Central Operations

SUBJECT: Proposed Implementation of Extratropical Surge and Tide Operational Forecast System - Pacific V1.0.0

The Coastal Survey Development Laboratory (CSDL) of the National Ocean Service (NOS) and the Environmental Modeling Center (EMC) have proposed implementation of the Extratropical Surge and Tide Operational Forecast System – Pacific (ESTOFS-Pacific) V1.0.0. ESTOFS-Pacific will provide water level forecast guidance of surge with tides, astronomical tides, and sub-tidal water levels (isolated surges) for the West Coast, Gulf of Alaska, and Hawaii. The ESTOFS-Pacific is designed to provide the surges with tides to NCEP WAVEWATCH III® (WW3) for coupling both systems. Therefore, its set-up is designed to mimic WW3: it uses the same Global Forecast System (GFS) forcing and has the same forecast cycle and length (6 hour nowcast followed by a 180 hour forecast 4 times per day), and will run concurrently on the NCEP Weather and Climate Operational Supercomputing System (WCOSS). The ESTOFS-Pacific will also provide the National Weather Service (NWS) with a third extratropical surge system in addition to the ESTOFS-Atlantic and the Extra-Tropical Storm Surge (ETSS) model that currently is based on the Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model (Jelesnianski et al. 1992). The ESTOFS-Pacific models surges with tides by utilizing an unstructured grid. ESTOFS-Pacific fills NWS gaps in operational storm surge modeling coverage for Hawaii. This model serves the needs of NCEP's Ocean Prediction Center (OPC), which is responsible for providing offshore marine forecasts. It also meets the needs of local Weather Forecast Offices for coastal marine forecasts and hazard predictions. Forecasters will benefit from the gridded astronomic tide prediction that is also provided by ESTOFS-Pacific, which can be combined with any gridded surge prediction (generated from model guidance or forecaster). ESTOFS-Pacific will run a nowcast and forecast 4 times daily. The nowcast will run for the previous 6 hours and forecast will run out to 180 hours.

ESTOFS-Pacific includes:

- An ADCIRC-based Surge+Tide Operational Forecast System for extratropical conditions for the West Coast, Gulf of Alaska, and Hawaii
- Three sets of guidance: surge+tide, surge only, tide only
- Runs side-by-side with the Global Multi-grid Wave model for future coupling of wave and surge modeling.

Output is being provided in two formats: 2.5 km NDFD-based grib2 files, and NetCDF files that contain the model's native unstructured grid. OPC is providing a web display of ESTOFS-Pacific output. The NWS/Office of Science and Technology/ Meteorological Development Laboratory (OST/MDL) delivers output from the operational ESTOFS-Atlantic model on the ET-SURGE website at stations that provide ETSS predictions

(http://slosh.nws.noaa.gov/etsurge_ESTOFS/). NetCDF output files will be disseminated via NCEP's NOMADS server (http://nomads.ncep.noaa.gov/), and grib2 output will be available on the NCEP FTP server.

Real time parallel data:

Beginning Friday, April 25, 2014 and starting with the 1200Z cycle, a consistent parallel feed of data will be available on the NCEP FTP server at:

HTTP:
http://www.ftp.ncep.noaa.gov/data/nccf/com/estofs/para/estofs_pac.YYYYMMDD

FTP:
ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/estofs/para/estofs_pac.YYYYMMDD

where YYYYMMDD is the year, month, and day.

OPC's website is located at:

http://www.opc.ncep.noaa.gov/estofs/estofs_pacific_surge_info.shtml

Request for Evaluation

OPC is listed as being the Service Center primarily responsible for this evaluation. CSDL/MMAP and the WFOs at Portland, OR, Eureka, CA, and Honolulu, HI are also recommended participants. MDL is optional, as are all other Service Centers, the NWS Regions, WFOs other than those listed above, government agencies, and private sector companies.

The 30-day evaluation period will start at 12Z on Friday, April 25, 2014 and run through May 24, 2014. Participants need to complete the attached "Model Implementation Subjective Evaluation Report" form and return to Chris.Caruso.Magee@noaa.gov no later than May 30, 2014. Please indicate the overall performance of the product, with any additional comments on specific cases with noteworthy positive or negative performance. Please note that NCO requires evaluators to specifically address the benefits stated in the attached form as to whether those benefits were observed or not. Any feedback you wish to provide during the evaluation period should be emailed to Chris.Caruso.Magee@noaa.gov .

A final coordination teleconference will be scheduled to review the evaluation and address any outstanding issues. Based on the outcome of that teleconference, NOS, EMC and NCO will prepare a recommendation for Dr. Lapenta (NCEP Director). This teleconference has not yet been scheduled.

Points of Contact

Chris.Caruso.Magee@noaa.gov (NCO)

Jesse.Feyen@noaa.gov (NOS/CSDL)

Model Implementation Subjective Evaluation Report

Scientific Review Team Member: _____

Region, Service Center or Company Representing: _____

Proposed Change: ESTOFS-Pacific v1.0.0

Model Developer: Jesse Feyen (NOS/CSDL)

Real-Time Parallel Runs:

General comments: _____

_____

_____

_____

_____

_____

Evaluation of expected benefits:

Do you observe the following and are they beneficial to you?

1. Are the forecasts of coastal water levels caused by tide and surge for extratropical storms impacting the Pacific Coast, Gulf of Alaska, and Hawaii beneficial to you? Please describe.

_____

_____

_____

_____

_____

2. Are the water level boundary conditions for the Nearshore Wave Prediction System in these areas beneficial to you? Please describe (if applicable).

_____

_____

_____

_____

_____

Recommendation:

Implement as proposed ___ **Reevaluate after changes ____**

Do not implement ___